REMARKS

The amendment to the specification on pages 17-18 serves only to insert the word "or" which was inadvertently omitted in the specification as filed. No new matter has been added by this amendment.

The above amendments to Claims 1 and 10 serve to clarify the scope of the claims and to more clearly claim the subject matter which Applicants regard as the invention. By these amendments, it is now evident that when the catalyst c)(2), i.e. one or more allophanate catalysts, is present, then the catalyst c)(1), i.e. one or more trimer catalysts, and/or the catalyst system c)(3), i.e. one or more allophanate-trimer catalyst systems, is also present. Support for this amendment can be found in the present specification on page 17, line 23 through page 18, line 5. Applicants respectfully submit that no new matter has been added by the preceding amendments to Claims 1 and 10.

Claims 1-18 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner stated that "[A]s drafted, the proviso mandates that c)(2) always be present and further requires that c)(2) be used with c)(1) and/or c)(3). This requirement is confusing in view of the Markusch language of component c) suggesting that c)(2) need not be used. Also, it is unclear how to interpret the "mixtures thereof" language in view of the proviso. Lastly, in view of applicants' remarks concerning the proviso, it is clear that applicants' have interpreted the language to mean other than what it actually recites, namely, that c)(2) must be used."

Applicants respectfully submit that the preceding amendments to Claims 1 and 10 now clarify the scope of the invention and exactly what subject matter is encompassed by the present claims. It is apparent in view of the present amendments that the "proviso" clarifies that when catalyst c)(2) is present, then the catalyst c)(1) and/or the catalyst system c)(3) is also present. Thus, the catalyst c)(2) is not used alone. With regard to the meaning of the language "mixtures thereof" in the Markusch group from which the catalyst c) is selected, it is readily apparent that

these "mixtures" include combinations of c)(1) and c)(2), c)(1) and c)(3), and c)(2) and c)(3). The skilled artisan would possess a reasonable degree of certainty as to exactly what subject matter is encompassed by the language "mixtures thereof". Accordingly, Applicants respectfully submit that this rejection is improper and request that it be withdrawn.

Claims 1-18 were also rejected under 35 U.S.C. § 103(a) as being unpatentable over the Slack et al references (U.S. Patent 5,955,609 or U.S. Patent 6,127,308) in view of the Scholl et al reference (U.S. Patent 5,124,370), and further in view of the Slack et al reference (U.S. Patents 5,663,272 or 6,887,399 or 6,991,746), or the Rosthauser et al reference (U.S. Patent 5,783,652), or the Markusch et al reference (U.S. Patent 6,482,913).

U.S. Patent 5,955,609 (Slack et al) and U.S. Patent 6,127,308 disclose a trimer catalyst system for aliphatic and aromatic isocyanates. Applicants note that these two references are from the same patent family. More specifically, U.S. Patent 6,127,308 is a divisional of the application which matured into U.S. Patent 5,955,609. Thus, the disclosures of these two patents are identical, but the claims are different. For convenience, Applicants' comments will be directed to U.S. Patent 5,955,609 unless otherwise noted.

The trimer catalyst system of the '609 patent comprises (A) a compound selected from the group consisting of (i) lithium salts of aliphatic or aromatic monocarboxylic acids or dicarboxylic acids, (ii) lithium salts of hydroxyl group containing compounds which have from 1 to 3 hydroxyl groups per compound, in which the hydroxyl groups are attached directly to an aromatic ring, (iii) lithium hydroxide, and (iv) mixtures thereof; (B) at least one allophanate catalyst; and (C) at least one organic compound containing at least one hydroxyl group. The trimer catalyst system of U.S. 5,955,609 is broadly described as being suitable for trimerizing both aliphatic and aromatic isocyanates.

Hexamethylene diisocyanate, diphenylmethane diisocyanate and toluene diisocyanate are used in preferred embodiments of the '609 patent. None of the final products in the '609 patent were freeze-stable liquids. (See column 4, lines 11-12.)

As set forth at column 4, lines 13-29, certain TDI products were found to be freeze-stable liquids. These were not, however, the subject of U.S. 5,955,609.

In the working examples of the '609 patent, there are three (3) examples which illustrate MDI as the isocyanate. The remaining examples are directed to TDI or HDI. Of the three examples which use MDI, the MDI comprises 98% by weight of the 4,4'-isomer and 2% by weight of the 2,4'-isomer. See MDI description at column 7, lines 50-52 of the '609 patent. This MDI component is used in Examples 10, 14 and 15. This MDI component is clearly outside the scope of the present claims.

Polyisocyanate mixtures of the diphenylmethane series and a process for their preparation are disclosed by U.S. Patent 5,124,370, i.e. the Scholl et al reference. These polyisocyanate mixtures of the diphenylmethane series contain isocyanurate groups. More specifically, the liquid polyisocyanate mixtures which contain isocyanurate groups have a NCO group content of 15 to 30% by weight, and are obtained by partial trimerization of the isocyanate groups of polyisocyanate mixtures of the diphenylmethane series. These polyisocyanate mixtures contain from 80 to 100% by weight of MDI isomers and 0 to 20% by weight of polymeric MDI. The MDI isomers comprise from 40 to 80% by weight of the 4,4'-isomer, from 20 to 60% by weight of the 2,4'-isomer and 0 to 8% by weight of the 2,2'-isomer, with the sum of the %'s by weight adding up to 100% by weight. See column 1, line 64 through column 2, line 9. In an optional embodiment, a hydroxyl-functional component may be present during the trimerization. A catalyst poison is added to terminate the trimerization reaction. (See column 2, lines 29-32.)

It is respectfully submitted that this combination of references does not render the presently claimed invention obvious to one of ordinary skill in the art.

The Slack et al reference discloses a trimer catalyst system for both aliphatic and aromatic isocyanates. This trimer catalyst system comprises (A) a compound selected from one of three specific groups of lithium compounds or lithium salts, (B) an allophanate catalyst, and (C) an organic compound which contains at least one hydroxyl group. Diphenylmethane diisocyanate is disclosed as one suitable diisocyanate therein (see column 7, lines 13, 24 and 33). When diphenylmethane diisocyanate is used in the examples of this reference, it consists of 98% by wt. of the 4,4'-isomer and 2% by wt. of the 2,4'-isomer (column 7, lines 50-52). This MDI

corresponds to the MDI used in Examples 10, 14 and 15. This MDI composition is clearly outside the scope of the presently claimed invention.

In the broadest sense, the Scholl et al reference discloses that liquid products which contain isocyanurate groups can be prepared from a polyisocyanate mixture containing 80 to 100% by wt. of monomeric MDI and 0 to 20% by wt. of polymeric MDI. Of the monomer, the 4,4'-isomer is from 40 to 80% by wt, the 2,4'-isomer is present in an amount of from 20 to 60% and the 2,2'-isomer is present in an amount of from 0 to 8% by wt. of the 2,2'-isomer, with the sum of these totaling 100% by weight monomer. (See column 2, lines 18-27.) Thus, these overall mixtures of MDI can contain from 0 to 20% by wt. of polymeric MDI, from 32 to 80% by wt. of the 4,4'-isomer of MDI, from 16 to 60% by wt. of the 2,4'-isomer of MDI and from 0 to 8% by wt. of the 2,2'-isomer of MDI.

There are three specific examples of different PMDI/MDI isomer mixtures in the Scholl et al reference. See column 4, line 65 through column 5, line 12. The first mixture (Isocyanate 1) comprises 56% of the 4,4'-isomer, 29% of the 2,4'-isomer, 5% of the 2,2'-isomer and 10% of polymeric MDI; the second mixture (Isocyanate 2) comprises 46-47% of the 4,4'-isomer, 52-53% of the 2,4'-isomer and less than 1% of the 2,2'-isomer; and the third mixture (Isocyanate 3) comprises 59% of the 4,4'-isomer, 23% of the 2,4'-isomer 3% of the 2,2'-isomer and 15% of polymeric MDI.

The Examiner's position appears to be that it would be "obvious" to one of ordinary skill in the art to combine the MDI mixtures of the Scholl et al reference with the process and catalyst system of the Slack et al reference (either the '609 reference or the '308 reference) to "arrive at" the presently claimed invention. Applicants respectfully disagree.

It is respectfully submitted that the present claim language requires an isomeric mixture of MDI of (i) from 10 to 40% by wt. of the 2,4'-isomer, (ii) from 0 to 6% by wt. of the 2,2'-isomer and (iii) from 54 to 90% by wt. of the 4,4'-isomer. By comparison, the only isomeric mixture of MDI specifically disclosed by the Slack et al reference comprises 98% by wt. of the 4,4'-isomer and 2% by wt. of the 2,4'-isomer (column 7, lines 50-52). It is therefore "obvious" that there is no overlap between the present invention and the Slack et al reference as the starting isomeric mixture of

MDI required by this reference is different than that which is required by the present claim language.

In the Scholl et al reference, none of the three isocyanate mixtures set forth in the working examples overlap with the MDI mixture required by the present claims. Accordingly, combining any of these three isocyanate mixtures of the secondary reference with the catalyst system of the primary reference does not result in the presently claimed invention. Applicants therefore submit that the combination of the Slack et al references with the Scholl et al reference does not properly suggest the presently claimed invention to one of ordinary skill in the art.

Two of the three isomeric MDI mixtures of the Scholl et al reference contain polymeric MDI. It is readily apparent in light of this that these two mixtures (i.e. Isocyanate mixture 1 and Isocyanate mixture 3) do not overlap with the presently required isomeric MDI mixture. Polymeric MDI is not present in the presently required MDI composition. Thus, substituting either of these two isocyanate mixtures for the MDI mixture of the Slack et al reference(s) does not result in the present invention.

The other isomeric MDI mixture, i.e. Isocyanate mixture 2 which is described at column 5, lines 1-6 of the Scholl et al reference, also does not overlap with the isomeric MDI mixture required by the presently claimed invention. This isomeric MDI mixture comprises 46-47% by weight of the 4,4'-isomer of MDI and 52-53% of the 2,4'-isomer of MDI, and less than 1% by weight of the 2,2'-isomer of MDI. It is readily apparent that neither the amount of 4,4'-isomer or the amount of 2,4'-isomer in Isocyanate mixture 2 of the Scholl et al reference overlaps with the relative amounts of 4,4'-isomer and/or 2,4'-isomer required by the present claims. Thus, substituting this MDI isomer mixture for that of the Slack et al reference also would not result in the presently claimed invention.

It is respectfully submitted that although Isocyanate mixture 2 of the Scholl et al reference can be used to prepare a partially trimerized diphenylmethane diisocyanate which is a liquid trimer product as shown therein (see Examples 7 and 8 in Table 1 at columns 5-6 of the '370 patent), Isocyanate mixture 2 is outside the scope of the present claims. Also, the product of Example 7 obviously does not contain allophanate groups as a hydroxyl group containing material is not present